

# AVL - Mapping

Automatic Vehicle Location



# **AMO**

## **ALECS Mobile On-line**

### **A Virtual Office in the Car**

- All files can be accessed and updated mobile.
- Messages and replies are transmitted as data; provides security and privacy.
- Text to speech and voice recognition commands.
- Photo imaging/mug shot of persons can be transmitted individually or broadcast for rapid distribution.
- DMV, state accident and incident reports can be completed and filed from the field.
- Increased officer safety and time in the field.



# **Local, State & NCIC Interface**

- Interface to crime information databases from all workstations.
- Users are provided menu options for various inquiries: driver's information, criminal history, etc.
- Delivers responses to an AMO laptop, no need for dispatcher intervention, thus providing faster response to in-field requests.
- Frees dispatcher's time, while simultaneously giving Police Officer important information.
- Increases traffic summonses and arrests.




# PISTOL

**Photo Imaging Software Technology On-Line**




- Enables capturing images of prisoners, property, accident and crime scenes, etc. and links them instantly to the ALECS database.
- Utilizing AMO, photos can be transmitted to the laptop computer for identification, searches, etc.
- Photos relating to a specific event can be linked, retrieved, or printed on demand, with field notes attached.
- Searches for match and physical characteristics.
- Automatic photo arrays.
- Decreases crime/impersonation and false I.D. utilization.

compu  DAWN

# PISTOL

Photo Imaging Software Technology On-Line

	Date: 01/10/97 Time: 1644
	Location: COMPTONDAWN POLICE
	General Line Up #: 51
	Case #: SC-00001
	Lineup # in the case 7

Comments

Print	Load
Refile	Information
Exit	

# Civil Warrants

- Fully integrated with ARMS™.
- Provides listing of warrants by name or number.
- Alerts officer if a person has an outstanding warrant.
- Provides accuracy and saves time resulting in increased revenues.



# Billing Modules

## False Alarm

- Automates the billing process for false alarms.

## Parking/Traffic Violations

- Integrated with the persons file by name and license number.
- Payments and balances are maintained.
- Dunning and scofflaw letters are created.
- Information can be transmitted to the state DMV.
- Increases efficiency and revenue for municipality.



# Typical Users of the Spectrum



Satellite Systems (500 MHz)  
Radars (10- 30 MHz)

Channel 20 506-512 (6 MHz; 6000 kHz)  
Taxi (25 kHz)

Channel 5 72-86 (6MHz;6000 kHz)  
Police, Fire, Ambulance Radio (20 kHz)

Citizens Band Radio (10 kHz)

Voice Radio (3kHz)

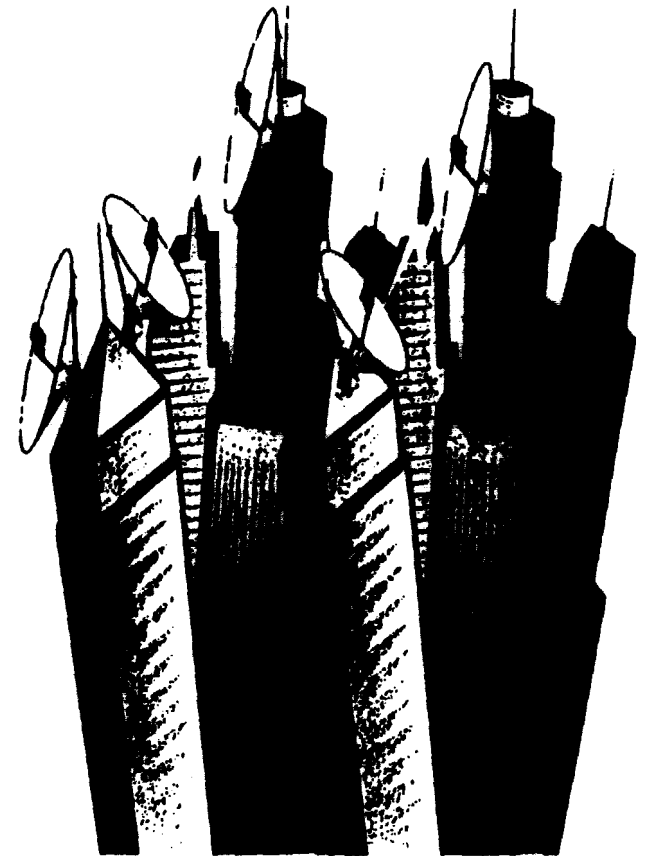
Commercial Broadcast Band (540 - 1600 kHz)

compu  DAWN



# Spectrum Congestion Analysis

- ◆ Most Existing Public Safety bands congested; Communication bands are the most cluttered.
- ◆ More requests in the Public Safety bands.
- ◆ Spectrum Congestion causes huge coordination problem.
- ◆ Problems are compounded by sharing within same bands.



# Airwaves for Public Safety

FREQUENCY 100 hertz 10,000 1 MHz  $10^2$  MHz  $10^4$  MHz  $10^6$  MHz  $10^8$  MHz  $10^{10}$  MHz  $10^{12}$  MHz  $10^{14}$  MHz  $10^{16}$  MHz

BAND

USE

Alternating Current

AM Radio

Heat Lamps

Sun Lamps

VHF Television  
channels 2-6

FM radio  
stations VHF Television channels 7-13

UHF television frequencies

FREQUENCY 25 MHz 100 200 300 400 500 600 700 800 900

BAND

NON-  
FEDERAL  
PUBLIC  
SAFETY  
CHANNELS

**25-50 MHz**  
Includes 315  
channels for  
wide area  
coverage,  
mostly by state  
highway patrols.

**156-174 MHz**  
The first public safety frequencies were allocated  
here; includes 242 channels.

**220-222 MHz**  
10 channels recently  
allocated, but little suitable  
equipment is available.

**470-512 MHz**  
Some unused TV channels  
are available.

**450-470 MHz**  
74 Channels.

**806-821 MHz and  
851-866 MHz**  
70 Channels.

**821-824 MHz and  
866-869 MHz**  
230 Channels  
allocated in 1987.

Compu-DAWN, Inc. (formerly *Coastal Computer Systems, Inc.*) is the developer and installer of the **ALECS 2000™** suite of Public Safety Solutions. System configurations range from small PC based single and multi-user systems to large PC-LAN or UNIX platforms. Compu-DAWN solutions will be tailored to meet state and other geographic specific reporting and communications requirements.

**ALECS 2000™** Modules include:

- |  |   |
|--|---|
| ➤ <b>Records Management System</b>                         | ➤ <b>ALECS Mobile Online (AMO™)</b>             |
| ➤ <b>E-911 Interface</b>                                   | ➤ <b>Visual Computer Aided Dispatch (VCAD™)</b> |
| ➤ <b>Mobile Data Communications</b>                        | ➤ <b>State Information Systems Interface</b>    |
| ➤ <b>Integrated Mapping/AVL</b>                            | ➤ <b>False Alarm Billing</b>                    |
| ➤ <b>PISTOL™ (Photo Imaging System Technology On Line)</b> |   |
| ➤ <b>Parking Violations</b>                                |   |

#### **Mobile Data Communications - AMO™ - ALECS MOBILE ONLINE**

This module allows the use of laptop computers in vehicles to communicate with the host computer by way of public or private radio network or CDPD (cellular digital packet data) network. The mobile units can perform all functions as terminals in police headquarters - entering or editing data, retrieving current information, etc. Data entered in the laptop is immediately stored in the database, and any information in the database can be immediately displayed on the laptop's screen.

#### **Records Management System**

**ALECS 2000™** records management tools organize information to increase efficiency, aid investigations and improve management control by providing:

- Comprehensive incident-based records system fulfilling state and Federal UCR requirements
- Labor-saving administrative aids help for scheduling, electronic messaging, work assignments and personnel tracking
- System-wide person, property/evidence, vehicle and geo-based address files eliminate the need for duplicating entries from module to module
- Case/Arrest tracks all information related to criminal incidents. Custom inquiries allow selective retrieval of data (patterns, suspects, etc.)

### ***VCAD™ Visual Computer Aided Dispatch***

This module uses a highly developed geobase to recommend the proper units to specific locations. The system may be set up with dedicated call takers and dispatchers or with dual function workstations that allow the operator to receive the call and dispatch units (voiceless dispatching), passing along information on person and location histories, known hazards, etc. Compu-DAWN's CAD can have an *E911 Interface*, a *Mapping Interface*, an *AVL Interface* and a *Mobile Data Interface*.

### ***Integrated Photos/Mug Shots Imaging***

The Photos/Mug Shots Imaging module allows for the capture of mug shots, crime and accident scenes, property and evidence and links them to the database. Photo Arrays for line-ups can be created based upon user defined criteria. These images can be attached to cases and viewed on the screen or printed.

### ***Parking Violations Module***

This optional module records all tickets issued in violation of the local jurisdiction's parking laws, and tracks payments received. The module is linked to the *ALECS 2000™* persons file, and an historical record is kept on license plate number. Partial payments and balances due are maintained, along with due dates and ticket status. Dunning and scofflaw letters are created, and various reports generated for use by management. An electronic file of scofflaws can be made for transmission to the state DMV.

### ***Text-To-Speech***

This module is an optional component of the *AMO™* software subsystem. Dispatch messages from *VCAD™* are enunciated at the laptop, freeing the officer from the necessity of reading the screen. Messages can be repeated by clicking on one button. The text of the message is also presented on the screen. Volume and sound characteristics can be adjusted to the preference of the individual user.

### ***Enhanced 911 Interface***

The *ALECS II Enhanced 911 Interface* imports the subscriber's name, number and location (ANI/ALI) data from the telephone company plant equipment directly into the application enabling quick and accurate dispatching of required units. The data is displayed either on the event screen (police blotter) or the CAD screen, and any historical information on the person or location can be retrieved. If the address for the call for service is the subscriber's address, pressing one key will move that information to the proper place on the screen. The physical connection to the phone company's 911 equipment is via an RS-232 connection to the *ALECS* server.

## **ALECS MOBILE ONLINE (AMO™)**

### **"Office in the Car"**

**ALECS Mobile Online** provides the officer in the vehicle, by means of a laptop computer and RF communications, with full, interactive access to the local headquarters' database.

Information from any file can be accessed and updated real-time, and made available immediately to other users - for example, detectives who will be 'catching' the case. Officers in patrol cars can complete forms in the field, avoiding the necessity of returning to headquarters.

Dispatch messages and patrol officer replies are transmitted as data, providing security and privacy. Messages can contain CAD generated information on hazards, person and location details and event description. Messages are stored until deleted, allowing repeated viewing.

A "**Text-to-Speech**" option allows critical messages to be vocalized at the laptop, enabling officers to perform duties without the necessity of viewing the screen. This feature is especially useful when the patrol vehicle is moving, or the officer is dealing with a potentially violent situation.

With the **ALECS Photo Imaging/Mugshot** software, photos of persons (wanted felons, missing persons, etc.) can be transmitted individually or in broadcast mode to **AMO™** users, providing rapid dissemination of vital visual information. Descriptive text accompanies the image, providing information relevant to the person or the circumstance. This feature distributes extremely time sensitive material to officers, avoiding delays involved in using print and/or FAX distribution.

The RF link can be a variety of radio communications methodologies (private radio network licensed to the agency, public radio network provider, CDPD, 800 Mhz trunked system, etc.), selected by the installation.

An additional function for **AMO™** users communicating via CDPD or RAM Mobile Data Services is the capability to remain connected outside the vehicle. Using battery power and a wireless modem PCMCIA card, the user can maintain interactive communications with the database. This allows a detective, for example, to take a statement inside a residence and update a case file immediately.

## **ALECS 2000™ VISUAL COMPUTER AIDED DISPATCH ("VCAD™")**

**ALECS 2000™ VCAD** is a full featured, easy-to-use Computer Aided Dispatching system for Police, Fire, and Emergency medical Services. **ALECS II VCAD** aids the dispatcher in assigning resources promptly and efficiently, and provides critical information from the **ALECS II** database to dispatchers and responding public safety officers.

**ALECS 2000™ VCAD** provides a Graphical User Interface (GUI) which delivers a fast, accurate and visually means to perform call taking and dispatching functions. Icons (color coded) show the types and status of departments and/or units - police vehicles, fire apparatus and ambulances. Soft buttons allow for the selection of pre-plans, location history, location hazards and geofile information. Users can "point and click", use a Touch Screen or enter data via a keyboard.

Fully integrated with the **ALECS 2000™ Records Management System**, **VCAD** features include:

- ◆ Efficient GUI user interface, for rapid selection of incident information, available resources and dispatching functions.
- ◆ Geo-based address file with nearest cross streets, run cards, hydrant locations, grid and zone.
- ◆ User sizing of windows of active and pending calls.
- ◆ User selection of information elements in the windows for active and pending calls.
- ◆ Recommends available units for dispatch.
- ◆ Interfaced to *Enhanced 911* (E911) module.
- ◆ Incident location shown on map of locale, using *Mapping Interface* module.
- ◆ Flagging of warrants, Orders of Protection, hazards, alarm sites, person histories and location histories.
- ◆ Look-ups by location name, address, alarm number.
- ◆ Multi-level pre-plan responses and suggested units based on location and availability.
- ◆ Quick access to view details of previous calls, warrants, departmental orders and procedures, hazmat data and emergency business files.
- ◆ Date/time/event numbers stamped by system.
- ◆ User assign timers.
- ◆ Hard copy log.
- ◆ Extensive set of reports for planning and analysis.

## ***ALECS 2000™ RECORDS MANAGEMENT SYSTEM***

***ALECS 2000™*** Records Management System offers a comprehensive, user friendly method of gathering, manipulating and retrieving data in real time usage.

In Public Safety, the lives of responding personnel and the public at large depend on how fast information can be made available to the responders. ***ALECS 2000™*** provides critical information, such as Person's History, Location History, Known Warrants, Orders of Protection, etc., to enable field personnel to make more informed decisions on how to respond to a particular event.

Data collection is fast and there is no need for redundant data entry. All the modules "talk to each other". For example, a name entered in the Persons module would not need to be re-keyed in Tickets or Blotter.

***Records Management*** includes the following integrated modules:

- Blotter
- Case/Arrest
- Follow-up Reports
- Persons/Aliases
- Tickets
- Warrants
- Alarms/Emergency Business
- Property Registration
- Custom Inquiry
- Departmental Orders & Procedures
- Mailbox/Notepad
- Memos/Letters
- Personnel
- Police Diary
- Roll Call
- Standard Reports
- Vacant Houses
- Create/Print Forms
- Orders of Protection
- Firearm Permits
- Vehicle Maintenance
- System Manager

**ALECS 2000™** is a comprehensive information management system specifically designed for police departments. It applies advanced techniques to the problem of managing the large volume of data processed by the modern law enforcement agency.

### **Highlights**

#### **Ease of Use**

Procedures in **ALECS 2000™** are logically designed to minimize training requirements. Function keys are displayed directly on-screen. Confusing codes have been replaced by dictionaries which allow viewing choices on screen and selection by typing in one or two letters of the choice.

#### **Multi-level Security**

Each individual user of **ALECS 2000™** is assigned a private ID code and a personalized security template. Only those functions for which the user is authorized appear on screen. Also, sensitive files (e.g., sex crimes, confidential investigations) are protected by additional passwords.

#### **Flexible Searches**

**ALECS 2000™** includes powerful tools for searching files and search for criteria can be combined to perform more specific searches. Output can also be exported to other applications for additional processing.

#### **Integrated Database**

Persons, vehicles, addresses and property/evidence entered in one module are available and shared by the other modules. A complete record of the Department's interaction with a person or location can be produced.

#### **HOTKEY Support**

With **ALECS 2000™ HOTKEY** feature, an officer can temporarily suspend entry into the Blotter, view another file, and then automatically return to the exact point when the first job was suspended. For example, when making a Blotter entry for an alarm activation, the user can suspend the blotter entry, view address contact information in the alarm file, view the history of calls to this location or from this person and then automatically resume the blotter entry.



<b>Alarms</b>	The Alarms/Emergency Business module maintains a file of all businesses or residences with alarms. Information is collected on the type and location of alarms and whom to contact in case of emergency. Alarm site information may be viewed directly from the Blotter. Also, the system collects information on responses to alarms and produces a report on premises sending an excessive number of alarms in error.
<b>Aided Cases</b>	This module provides the facility for collecting and retrieving data related to medical aided cases. The Aided Cases Report provides a listing of all aided cases in a selected data range.
<b>Vehicle Impounds</b>	This module provides the facility for the entry and retrieval of information on impounded vehicles. The system generates a letter advising the owner of the vehicle of its status, and produces a release notice. The system generated the Vehicle Impound Report which provides a listing of all the vehicle impounds in a selected date range.
<b>Vacant House</b>	The Vacant House module collects and stores data on addresses where the owners have indicated that the buildings will be unoccupied for a period of time. The system produces a report listing vacant houses by post and as flagged in dispatch.
<b>Diary/Police Info</b>	This module collects information on special conditions of which department members should be aware and generates a listing on the day of the tour for use by the supervisor on duty. The user making the diary entry specifies the date range, the tours and days of the week that the entry should appear. This module simplifies planning in advance for parades, special events, deployment of extra personnel, etc.
<b>Personnel</b>	The Personnel module stores the following kind of information on members of the department; demographics, next of kin, promotions, compensation claims, education, training, firearms, department awards, charges and specifications and uniform equipment issued. The Personnel Search module permits scanning files for department members with special skills and training.
<b>Persons</b>	<i>ALECS 2000™</i> maintains a complete record of interactions between the Department and persons entered from the Blotter, Case/Arrest, Aided Cases, Auto Accidents, Tickets, Warrants, etc. Using part of a name (even part of a first name is sufficient), the user can reference a person's history. This module can also be used for entering existing name card files into the system. A special section for juveniles is maintained and protected by added security so that only authorized personnel can gain access.

<b>Property</b>	This module collects information on evidence and stolen, recovered, lost, found and impounded property. Names and addresses of owner and recovering person are maintained as well as detailed item description and status. Property files may be scanned by a variety of criteria for locating an individual item, and Property List provides a report on property handles by status, type or role.
<b>Departmental Orders/Procedures</b>	Using this module, the Department can maintain files of departmental orders and procedures organized by category and subject. Quick reference to these files is available from the dispatch desk via HOTKEY.
<b>Letters/Memos</b>	This module provides for the creation of interdepartmental correspondence, letters, etc. The system provides built-in spell checking.
<b>Mailbox/Notepad</b>	The Mailbox permits messages to be sent by a department member to one or more other department members. The messages may be viewed on the screen or printed. Recipients are automatically notified of unread messages upon logging onto the system. Also, each department member is provided a work area for creating memos and reports.
<b>Custom Inquiries</b>	The Custom Inquiries module provides a powerful facility for ad hoc searches of the <i>ALECS</i> database. Searches may be defined by department personnel using one or more "search variables". Once the search is complete, the information may then be sorted and displayed or printed.
<b>Security Manager</b>	Authorized department personnel will use this sophisticated facility for controlling access to the various functions of the system. <i>ALECS</i> permits the system manager to define a unique set of functions for each user. Those functions which are not authorized for a user cannot be accessed and do not appear on the screen of the terminal on which that user is logged. Also, this module permits the system manager to view or change any of the security passwords in the system.

***ALECS 2000™ System Utility Functions***

Dictionaries

Security manager

Password Manager

Printer Manager

Printer Assignment

Change Log

Back-load Blotter

Clear File Queues

Computer Usage Log

Monthly Statistics

Persons Merge

Setup Constant Variables

Letters/Memos Password Manager

Halt Blotter Print

System Utilities:

Broadcast Message to Users

System Status

Database Free Space

Reset System Time/Date

Verify Database

Terminate Job

Release Terminal

Operating System Gateway

Update ALECS

Enable/disable log-in

E911 Control

Tie Call Taker & Status Screens

User Password Control manager

Radio Dispatch Control

### ***PISTOL™ (PHOTO IMAGING SYSTEM TECHNOLOGY ON LINE)***

The ***ALECS 2000™ PISTOL™ System*** enables departments to capture images of prisoners, property, accident scenes, crime scene photos, etc., and link them to the ***ALECS 2000™*** database for viewing with other pertinent information.

Mugshots are linked to the person's data, and can be retrieved for identification at police headquarters. Color or black/white are supported, along with print capability. Multiple images of a given person can be captured and stored. Printed Mugshots are accompanied by a summary of the person's descriptive information.

If ***AMO*** is installed in the police vehicle, photos of wanted or missing persons can be transmitted from the ***ALECS 2000*** database to the laptop computer, for use in identification, searches, etc. Photo transmissions to ***AMO*** laptops can be done individually or in broadcast.

Lineups can be created, using powerful search arguments based on specified characteristics (e. g., physical description). Lineups can be viewed on-screen or printed, along with identification information (e.g., date/time of use, witness, etc.). Lineups can be re-ordered for use by multiple witnesses. Photos relating to a crime can be linked to a specific case, and retrieved or printed on demand, with officer's notes attached.

Any properly configured ***ALECS 2000*** workstation can view images, create lineups, etc. A dedicated PC is required for image capture and image storage.

Images can be captured with either a video camcorder or a still shot digital camera, or entered in the system through appropriate file types.

This fully integrated system in effect allows you to "staple" a photograph to any record in the ***ALECS 2000*** database. This can be particularly effective in the investigation and reporting of traffic accidents. Armed with an inexpensive digital camera, an officer can easily and readily take pictures at the scene of an accident and immediately "staple" those pictures to the accident report. That entire report can be created in the car using our ***AMO*** laptop and then transmitted to the headquarters database for access by any other authorized user of the system.

## **MAPPING INTERFACE**

The **ALECS 2000 Mapping Interface** works with mapping software (e.g., MapInfo) to provide several unique features:

- ◆ **CAD** will automatically display the location of the current event on the locale map which is displayed on a dedicated monitor. The dispatcher can manipulate the map to give greater detail to the responding units.
- ◆ When used as part of **ALECS Mobile Online (AMO)** and **AVL**, the map will display the location of all vehicles properly equipped. The status of vehicles is color-coded for ease of recognition, and their movement will be shown on the monitor.
- ◆ With **AMO**, maps can also be stored in the vehicle laptop, enabling full display of unit locations and event locations. In the field, supervisors would be able to dispatch units, performing 'command and control' - such as at a major incident (disaster, hostage situation, etc.).
- ◆ When used as part of the mobile **ALECS** solution, maps are displayed for the end user to give him quick access to the event's location and accompanying data that may be entered in by the agency, (i.e., floor plans, photos, water sources, location of invalids within a building, etc.)
- ◆ Data from the **Records Management System** will enable the creation of pin maps to graphically display locations of various events, (i.e., location of all robberies in the jurisdiction within a specified date range and committed by a perpetrator with a particular MO).

### ***AUTOMATIC VEHICLE LOCATION (AVL)***

With the addition of the *ALECS II AVL Interface* software and an *AVL* (Automatic Vehicle Location) PCMCIA card in the *AMO* laptop, the location of the vehicles can be transmitted to police headquarters and overlaid on a map displayed on a large screen monitor.

The location is determined from signals received from the satellites in the Global Positioning System (GPS), and sent from the laptop to the headquarters computer system. A monitor shows the location and status of vehicles (indicated by color codes), and their movement plotted on the map. The *ALECS II CAD* software can provide the location of the event, which is indicated on the map by a red arrow.

Headquarters personnel can manipulate their view (zoom in/out) to view the map in greater detail, or move the map (up/down/sideways) to look at specific areas. *AVL* provides management and dispatchers with a easily comprehended visual representation of assets, based on computer generated information rather than voice reports.

An option is available to provide mapping capability in the police vehicles, delivering true "command and control" to supervisors working in the field (e.g., at a disaster scene, etc.).

## **COMMUNICATIONS SERVER**

ALECS 2000™ has incorporated an interface to state and national databases, that is available at all workstations and mobile computers. In New York State, the interface is to *NYSPIN* (the New York State Police Information Network). Inquiries transmitted to the state systems are also forwarded to the National Crime Information Center (NCIC) database. This interface and communications capability can be implemented for any agency in any state or county.

For headquarters users, the communications interface delivers an integrated menu option for inquiries (e.g., driver information, person's criminal history, etc.) and updates. The work is performed at the user's workstation, rather than using a separate, dedicated terminal.

For mobile users, the *communications* interface delivers responses to inquiries from an *AMO* laptop. The need to call a dispatcher at headquarters to enter the request is eliminated, providing faster response to the officer and off loading work from the dispatcher.

The connection to the communications system can be either by means of a dedicated telephone link direct to the state computer system, or by cable connection to an existing "Enforcer" terminal, configured with appropriate software.

## ***FALSE ALARM BILLING MODULE***

This optional module automates the billing processes for false alarms from businesses and homes. The *ALECS 2000™ False Alarm Billing* module provides an extensive set of functions related to classifying, and charging for, responses to false alarms of various kinds. The user has flexibility in setting alarm types, chargeable/non-chargeable, trigger levels, schedule of fines and other conditions (e.g., expired permit, grace period, etc.)

Alarm billing is linked to a blotter event, with an alarm type corresponding to an event type. Using the information in the blotter and the criteria selected by the user, the *False Alarm Billing* module prints pre-formatted letters, containing variable information, and labels. Date ranges, individual locations, aged items, etc. can be selected.

Payments, full and partial, are recorded, and the status of outstanding fines updated and receipts are printed. Various detailed management reports can be compiled (e. g., false alarms by location, type, amounts uncollected, etc.). An audit trail, logging all entries to the payments file and any changes to the status of fines, is maintained.



